Claims 1 and 8 were amended; claims 2-7 and 9-19 are unchanged.

Claim Objection

Claim 1 has been modified to avoid any ambiguity with regards to antecedence. This change has been made in accordance with a request by Examiner.

Claim Rejection Under 35 U.S.C. 103:

Claims 1-19 have been rejected under 35 U.S.C. 103(b) as being obvious with regards to applicant's admitted prior art (AAPA) in light of IBM technical disclosure bulletin NN78101978 (TBD).

The AAPA describes the PKCS15 format for smart cards. The AAPA defines four general classes of objects and a set of commonly used instructions for storing, accessing and rewriting these objects. It does not specify how to use a single block of memory to efficiently store pointers and their related objects in a same memory.

Independent claim 1 is directed toward a method of encoding information within non-volatile memory of a smart card which includes storing pointer data in at least a first available memory location most proximate the start address and between the start address and the end address, the pointer data indicative of a data object location. This is very different from and therefore not obvious in light of the AAPA.

Similarly, claim 8 teaches a method of encoding information within non-volatile memory of a smart card which includes storing pointer data in at least an available memory location proximate the start address and between the start address and the end address, the pointer data indicative of a data object location which again is very different from the AAPA and therefore not obvious in light of the AAPA.

Claim 15 teaches a smart card comprising a continuous block of available memory between the last stored pointer data and the data object location indicated by the last stored pointer data, the continuous block of available memory for storing therein of pointer data and data objects. This is also not obvious in light of the AAPA.

The other claims all depend, either directly or indirectly, from claims 1, 8 and 15 and therefore are not obvious in view of the AAPA.

The TBD discloses a method of utilizing a fixed size memory storage unit. In a memory, according to the TBD, pointers to objects are stored at one end of the memory and some of the objects are stored at the other end of the memory. Typical operations associated with computer programs commonly require the allocation of memory followed shortly thereafter by a release of this allocation. The technique provided by the TBD appears to be intended to reduce latency in a computer system by loading some objects into a low latency memory instead of maintaining all objects on a high latency storage medium. Thus, the TBD provides a method of organizing a computer memory but fails to disclose why it is advantageous to reorganize the computer memory. It will be apparent to one of skill in the art of computer design that the TBD is intended to provide a method of organizing a memory for caching data from a high latency storage medium.

This is very unlike the invention as claimed in amended claims 1 and 8 as well as independent claim 15. The independent claims 1, 8 and 15 feature or make use of a non-volatile memory. Conversely, the TBD appears to make use of a conventional computer memory. When using a typical smart card, various security keys are maintained in memory along with pointers to those keys. These keys are not typically accessible to a computer supporting the smart card. Unlike the memory described by the TBD, the smart card memory is very rarely written to. If the smart card memory is filled then it is unable to store additional keys. If a request to store additional keys is made the smart card will typically refuse the request and provide an error signal. That said, a smart card does permit writing instruction specified within the AAPA and thus it could be used to remove objects and thereby free up memory. Clearly, a person of skill in the art of smart card design would not be drawn to this reference when such a person initiates research on smart card memory architectures. Instead, a person of skill in the art of smart card design would look for prior art that teaches a method of efficiently using a non-volatile memory. The TBD does not suggest the use of non-volatile memory; instead the memory used is clearly intended to be written to very often with respect to a smart card application. Additionally, the TBD is vague regarding what advantages it offers. Claim 1 teaches a

method of encoding information within non-volatile memory of a smart card comprising the step of providing a directory file having a start address and an end address within non-volatile storage of a smart card. The TBD does not suggest the use of a non-volatile memory or the use of a smart card. Similarly, claim 8 teaches providing a directory file having a start address and an end address within non-volatile storage of a smart card comprising the step of providing a directory file having a start address and an end address within non-volatile storage of a smart card. Also, claim 15 teaches a smart card comprising a directory file having a start address and an end address within non-volatile storage of a smart card. In contrast to the independent claims 1, 8 and 15, the TBD teaches the use of a memory cache that stores objects that are also stored by "an auxiliary storage device, such as a magnetic disk. The use of such a system with a smart card would offer an opportunity for a security breach and thereby defeat the purpose of using a smart card. A person of skill in the art of smart card design would be immediately aware of this and therefore the independent claims 1, 8 and 15 are not rendered obvious by the TBD. Although applicant believes that the TDB is intended for memory caching this is inferred from the use of an auxiliary storage device but this is never clearly stated.

The AAPA teaches a standard in which a set of objects and related functions are defined. The TBD teaches a memory management technique that appears to be intended for memory caching. Clearly, there is no use in providing a memory cache for high security data objects and therefore it is uncertain what motivation to combine exists between the TBD and AAPA.

Consequently, it is not surprising that current smart card memory management techniques do not follow traditional computer memory techniques and that prior art smart cards do not feature a memory allocation system as claimed. Further, considering the vast quantity of memory management systems and techniques employed by computers today it is not unsurprising that a person of skill in the art of smart card design and memory allocation would ignore the prior art TBD when designing a new smart card memory system.

Applicant asserts that the smart card memory management method disclosed by the claimed invention is not obvious in light of the aforementioned prior art when considered either alone or in combination.

Therefore, amended claims 1 and 8, as well as claim 15 are not obvious in view of any reference taken individually or in combination. As such, amended claims 1 and 8, as well as claim 15 are allowable.

No new matter has been added.

Please also charge any additional fees required or credit any overpayment to Deposit Account No: 50-1142.

Applicant respectfully submits that the claims are now allowable, and Applicant requests reconsideration of the present application.

Respectfully submitted,

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Attachment A

Clean Replacement Claims

A clean copy of the amended claims is provided as follows:

Claims 1 and 8

1. (Once amended) A method of encoding information within non-volatile memory of a smart card comprising the steps of:

providing a directory file having a start address and an end address within non-volatile storage of a smart card;

providing a data object for storage within the smart card;

storing the data object in at least a last available memory location within the directory file, the last available memory location nearer the start address of the directory file than an earlier stored data object; and

storing pointer data in at least a first available memory location most proximate the start address and between the start address and the end address, the pointer data indicative of a data object location.

8. (Once amended) A method of encoding information within non-volatile memory of a smart card comprising the steps of:

providing a directory file having a start address and an end address within non-volatile storage of a smart card;

providing a data object for storage within the smart card;

storing the data object in at least an available memory location proximate the last available memory location within the directory file, the last available memory location nearer the start address of the directory file than an earlier stored data object; and

storing pointer data in at least an available memory location proximate the start address and between the start address and the end address, the pointer data indicative of a data object location.

Attachment B

Marked up Copy of the Amendment

A marked up copy of the amended claims is provided as follows:

Claims 1 and 8

1. (Once amended) A method of encoding information within non-volatile memory of a smart card comprising the steps of:

providing a directory file having a start address and an end address within non-volatile storage of a smart card;

providing a data object for storage within the smart card;

storing the data object in at least a last available memory location within the directory file, the last available memory location nearer [a] the start address of the directory file than an earlier stored data object; and

storing pointer data in at least a first available memory location most proximate the start address and between the start address and the end address, the pointer data indicative of a data object location.

8. (Once amended) A method of encoding information within non-volatile memory of a smart card comprising the steps of:

providing a directory file having a start address and an end address within non-volatile storage of a smart card;

providing a data object for storage within the smart card;

storing the data object in at least an available memory location proximate the last available memory location within the directory file, the last available memory location nearer [a] the start address of the directory file than an earlier stored data object; and

storing pointer data in at least an available memory location proximate the start address and between the start address and the end address, the pointer data indicative of a data object location.